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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/507,122	09/10/2004	Ken Fukuta	121068	8903

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EXAMINER	
MAYES, MELVIN C	
ART UNIT	**PAPER NUMBER**
1734	

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/507,122	FUKUTA ET AL.	
	Examiner	Art Unit	
	Melvin Curtis Mayes	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

(1)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(2)

Claims 1, 3, 4 and 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300922 in view of either Mochida et al. 4,740,408 or Hattori et al. 4,810,554.

JP '922 discloses a method of making a ceramic honeycomb structure comprising: extruding a ceramic honeycomb from a die (ferrule); picking up images of the end surface of the honeycomb body and processing the picked up image so as to detect the positions of the cells; adhering a sheet to the end surface; calculating cell pitch based on detected cell positions to machine holes in the sheet by either laser or needle; filling the cells with slurry; and firing. The diameter of the hole pierced in the sheet has an area of 30-70% of the area of respective cells. The hole piercing process can be performed for the entire end surface or for two or more small blocks after dividing the cells into blocks.

Mochida et al. '408 teaches that in a ceramic honeycomb body for purifying combustion gas, the gas being treated tends to be concentrated at the central portion of the honeycomb body. Mochida et al. teach that fins are integrally formed with selected partition walls during extrusion in the central portion of the honeycomb body to eliminate the occurrence of accelerated deterioration of the central body portion which tends to hamper efficient purification of combustion gas (col. 3, lines 1-48, Figs 1-2).

Hattori et al. teach that a high strength ceramic honeycomb of high isostatic strength in all directions includes a number of quadrilateral cells arranged adjacent each other and triangular cells arranged in a zone in the proximity of the outer circumference of the honeycomb (col. 1, line 65 – col. 2, line 32, Fig. 5).

It would have been obvious to one of ordinary skill in the art to have modified the method of JP '922 for making a ceramic honeycomb structure by extruding the honeycomb body to have either: 1) fins formed with the cell walls in the central portion of the body or 2) quadrilateral cells adjacent each other and triangular cells in the proximity of the outer circumference of the honeycomb, as taught by: 1) Mochida et al., to eliminate the occurrence of accelerated deterioration of the central body portion which tends to hamper efficient purification of combustion gas or 2) Hattori et al., to provide a honeycomb of high isostatic strength in all directions.

By providing some of the cells with fins or some of the cells as quadrilateral while others are triangular, some of the cells are different in shape from other cells, as claimed, and by picking up images of the end surface so as to detect the positions of these cells to calculate cell pitch for machining holes, these differently shaped cells are obviously used as reference cells for providing reference points for drilling holes, as claimed.

(3)

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300922 in view of either Mochida et al. 4,740,408 or Hattori et al. 4,810,554 as applied to claim 1, and further in view of Bonzo 4,557,773.

Bonzo teaches that the covering for the end face of the ceramic honeycomb can be transparent, allowing the end face to be scanned through the covering by a suitable optical device to generate signals indicating the locations of cells (col. 4, lines 55-67).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by adhering the sheet to the end surface of the honeycomb before picking up images of the end surface, as Bonzo teaches that if the end face covering is transparent, scanning of the end face can be performed through the covering. Picking up images of the end surface before or after adhering the sheet would have been obvious to one of ordinary skill in the art, depending on whether the sheet is transparent.

(4)

Claims 1 and 3-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300922 in view of Inoue et al. 6,159,431.

JP '922 discloses a method of making a ceramic honeycomb structure comprising: extruding a ceramic honeycomb from a die (ferrule); picking up images of the end surface of the honeycomb body and processing the picked up image so as to detect the positions of the cells; adhering a sheet to the end surface; calculating cell pitch based on detected cell positions to machine holes in the sheet by either laser or needle; filling the cells with slurry; and firing. The diameter of the hole pierced in the sheet has an area of 30-70% of the area of respective cells.

The hole piercing process can be performed for the entire end surface or for two or more small blocks after dividing the cells into blocks.

Inoue et al. teach that a ceramic honeycomb body is provided with sufficient mechanical strength even in the thinning of the cell wall by forming a reinforcement portion on each corner part of an open-ended cell existing in a second zone outside a first zone. In the first zone, the cells are rectangular, while in the second zone, the cells are rectangular shape provided with each corner part thereof provided with a rounded or straight shaped fillet portion. Inoue et al. teach that for a an interconnected length (cell width) of 1.27 mm, round corner parts of radius of curvature of not less than 0.05 mm are excellent (col. 2-4, Figs. 1-2).

It would have been obvious to one of ordinary skill in the art to have modified the method of JP '922 for making a ceramic honeycomb structure by extruding the honeycomb body to have a first zone of rectangular cells and a second zone of rectangular cells with rounded corner as taught by Inoue et al., to provide sufficient mechanical strength by forming a reinforcement portion on each corner part in the second zone.

By providing some of the cells with rounded corner, some of the cells are different in shape from other cells, as claimed, and by picking up images of the end surface so as to detect the positions of these cells to calculate cell pitch for machining holes, these differently shaped cells are obviously used as reference cells for providing reference points for drilling holes, as claimed.

By providing some of the cells with round corner parts of radius of curvature of not less than 0.05 mm for cell width of 1.27 mm, Inoue et al. disclose or suggest a curvature radius as

claimed in Claim 5 and four adjacent cells having facing corner portions of curved shapes, as claimed in Claim 6.

(5)

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2001-300922 in view of Inoue et al. 6,159,431 as applied to claim 1, and further in view of Bonzo 4,557,773.

Bonzo teaches that the covering for the end face of the ceramic honeycomb can be transparent, allowing the end face to be scanned through the covering by a suitable optical device to generate signals indicating the locations of cells (col. 4, lines 55-67).

It would have been obvious to one of ordinary skill in the art to have modified the method of the references as combined by adhering the sheet to the end surface of the honeycomb before picking up images of the end surface, as Bonzo teaches that if the end face covering is transparent, scanning of the end face can be performed through the covering. Picking up images of the end surface before or after adhering the sheet would have been obvious to one of ordinary skill in the art, depending on whether the sheet is transparent.

Response to Arguments

(6)

Applicant's arguments filed January 3, 2006 have been fully considered but they are not persuasive.

Applicant argues that the applied references do not disclose or suggest using a different-shaped reference cell for providing a reference point for drilling holes and argues that the Examiner's assertion is baseless, conclusory and based on impermissible use of hindsight.

(7)

Applicant claims forming the honeycomb with at least one reference cell which is different in shape of the opening part from other cells and drilling holes in the sheets by use of the at least one reference cell as a reference point. According to the specification, images of the end faces of the honeycomb are picked up, the picked up images are processed and positions corresponding to the opening parts of the reference cells are specified for drilling holes.

The Examiner's position is based on JP 2001-300922 in which the the end surface of the honeycomb is imaged, the image is processed so as to detect the positions of the cells and the detected cell positions are used to machine holes in the sheet. Thus all of the cells are "reference cells" in that the imaged and processed cells are used to provide cell positions, or reference points, for drilling holes in the sheet. The secondary references to Mochida, Hattori et al. and Inoue et al. each teach that it is known to provide the cell openings of a honeycomb with more than one shape, for various reasons. The references thus suggest providing honeycomb with some cell openings of different shape than other cells. Because all of the cells are used to provide cell positions or references points for drilling as disclosed by JP '922, these differently shaped cells are also used as reference points. Applicant's use of cells for determining where holes are to be drilled, as set forth in the present specification, appears no different from that of JP '922. The only difference is that at least one cell (which includes multiple cells) has a different opening shape than other cells. As set forth by Mochida, Hattori et al. and Inoue et al., providing a honeycomb with cells of different opening shape is known for various reasons.

Conclusion

(8)

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

(9)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
March 10, 2005